

Case 3005***Crotalus ruber* Cope, 1892 (Reptilia, Serpentes): proposed precedence of the specific name over that of *Crotalus exsul* Garman, 1884**

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Abstract. The purpose of this application is to conserve the long used and well known specific name of *Crotalus ruber* Cope, 1892 for the red diamond rattlesnake (family VIPERIDAE) of southern California, the peninsula of Baja California and some offshore islands, by giving it precedence over the less widely used name *C. exsul* Garman, 1884. The latter name refers to the rattlesnake of the Isla de Cedros, Baja California, Mexico, which some authors now consider to be conspecific with *C. ruber*.

Keywords. Nomenclature; taxonomy; Reptilia; Serpentes; VIPERIDAE; rattlesnakes; *Crotalus ruber*; *Crotalus exsul*; California; Mexico.

1. In 1884 Garman (p. 114) described a rattlesnake *Crotalus exsul* from the Isla de Cedros, Baja California, Mexico. He mentioned two specimens (catalog no. MCZ 652 in the Museum of Comparative Zoology at Harvard University, Cambridge, Massachusetts). Garman's publication was printed in 1883 but not issued until July 1884 (see the MCZ Annual Report for 1883-1884, pp. 23, 32; the MCZ library copy is stamped '19 June 1884'). In 1892 Cope (p. 690) described a rattlesnake which is commonly known as the red diamond rattlesnake. This was originally published as *Crotalus adamanteus ruber* and was based on a single specimen, catalog no. USNM 9209 in the U.S. National Museum, Washington. No locality was mentioned and subsequently Smith & Taylor (1950, p. 356) restricted the type locality to Dulzura, San Diego Co., California.

2. For nearly 70 years (since Klauber, 1930, pp. 20-21) the range of *Crotalus exsul* Garman, 1884 has been accepted as solely the Isla de Cedros, whereas its close relative, the red diamond rattlesnake, *C. ruber* Cope, 1892 has been understood to extend from southern California throughout the peninsula of Baja California and on some of its offshore islands.

3. The two taxa have, however, long been regarded as only weakly differentiated (see, for example, Brattstrom, 1964, p. 244; Campbell & Lamar, 1989, p. 348). Grismer, McGuire & Hollingsworth (1994, p. 69) regarded Minton (1992, who used the name *Crotalus exsul*) as the earliest author to regard them as conspecific, but this was an error, as pointed out by Murphy et al. (1995) and confirmed by Minton himself (personal communication); he had only a single specimen, from Isla de Cedros. Possibly following that misinterpretation, Grismer (1993, p. 4) implied conspecificity by using the trinomen *C. exsul exsul* without comment. Grismer & Mellink (1994, p. 124) subsequently mentioned that they regarded the two taxa as

conspecific, but it remained for three of the authors of the present application (see Grismer, McGuire & Hollingsworth, 1994, p. 71) and Murphy et al. (1995) to defend that conclusion. In both the latter works, and in Grismer (1994a, p. 81; 1994b, pp. 20–21), the name *C. exsul* Garman, 1884 was adopted for the species.

4. Murphy et al. (1995, p. 271) noted that change of a long-recognized name for a species is sure to create extensive confusion and should be avoided if at all possible. Yet the same authors were forced to the conclusion that the two nominal species are inseparable and, with obvious reluctance, they adopted (p. 278) the name *C. exsul* for the single species. They also argued for the recognition of the subspecies *C. exsul ruber* from southern California and Baja California, and the insular *C. e. lorenzoensis* Radcliffe & Maslin, 1975, in addition to the nominotypical *C. e. exsul* limited to Isla de Cedros. On the other hand, Grismer, McGuire & Hollingsworth (1994) concluded that no subspecies of the taxon, with the possible exception of *C. e. lorenzoensis*, warranted recognition, and that interpretation would mean the complete elimination of the specific name *ruber*.

5. The name *Crotalus exsul* for the Isla de Cedros snakes has a long history of usage to the present time, but unquestionably the literature using *C. ruber* is profoundly more abundant and significant than that using *C. exsul*. *Crotalus ruber* has been far more prominent in medical, experimental, biochemical, anatomical and ecological works than *C. exsul*, and as an inhabitant of southern California the species has been the subject of a large number of popular, pedagogical and governmental publications. The difference in the amount of literature can be documented by a tabulation of the references of the two nominal taxa listed in the index volumes for Mexican herpetology (Smith & Smith, 1976, 1993), which are nearly exhaustive for the literature on Mexico (though less so for adjacent areas). For various name combinations of *C. ruber*, 428 different works by some 414 authors are listed for the years 1892–1990; and for *C. exsul*, 100 works by 80 authors during the period 1883–1989. The coverage for Mexico was made as complete as possible, but the difference in usages of the names undoubtedly is considerably greater than here indicated because no attempt was made to exhaust the literature on the species as a whole. References for the use of the names in California would surely yield a much higher proportion of those for *C. ruber* because this species alone occurs there. Representative lists of 31 additional references for the usage of *ruber* from 1989 to 1998, and 16 additional references for *exsul* from 1988 to 1998, are held by the Commission Secretariat. Both names are used in the following recent international works of reference: Weidensaul (1991), Welch (1994), Frank & Ramus (1995), Mara (1995), Mattison (1995) and Wüster, Golay & Warrell (1997).

6. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary powers to give the name *ruber* Cope, 1892, as published in the trinomen *Crotalus adamanteus ruber*, precedence over the name *exsul* Garman, 1884, as published in the binomen *Crotalus exsul*, whenever the two are considered to be synonyms;
- (2) to place on the Official List of Specific Names in Zoology the following names:
 - (a) *ruber* Cope, 1892, as published in the trinomen *Crotalus adamanteus ruber*, with the endorsement that it is to be given precedence over the name *exsul*

Garman, 1884, as published in the binomen *Crotalus exsul*, whenever the two are considered to be synonyms;

- (b) *exsul* Garman, 1884, as published in the binomen *Crotalus exsul*, with the endorsement that it is not to be given priority over *ruber* Cope, 1892, as published in the trinomen *Crotalus adamanteus ruber*, whenever the two are considered to be synonyms.

References

- Brattstrom, B.H. 1964. Evolution of the pit vipers. *Transactions of the San Diego Society of Natural History*, 13(11): 185–268.
- Campbell, J.A. & Lamar, W.W. 1989. *The venomous reptiles of Latin America*. xii, 425 pp., 568 col. figs. Cornell University, Ithaca, New York.
- Cope, E.D. 1892. A critical review of the characters and variations of the snakes of North America. *Proceedings of the United States National Museum*, 14: 589–694.
- Frank, N. & Ramus, E. 1995. *A complete guide to scientific and common names of reptiles and amphibians of the world*. 377 pp. NG Publishing, Pottsville, Pennsylvania.
- Garman, S. 1884. The reptiles and batrachians of North America. *Memoirs of the Museum of Comparative Zoology of Harvard College*, 8(3): 1–185.
- Grismer, L.L. 1993. The insular herpetofauna of the Pacific coast of Baja California, México. *Herpetological Natural History*, 1(2): 1–10.
- Grismer, L.L. 1994a. The origin and evolution of the peninsular herpetofauna of Baja California, México. *Herpetological Natural History*, 2(1): 51–106.
- Grismer, L.L. 1994b. Geographic origins for the reptiles on islands in the Gulf of California, México. *Herpetological Natural History*, 2(2): 17–40.
- Grismer, L.L., McGuire, J.A. & Hollingsworth, B.D. 1994. A report on the herpetofauna of the Vizcaino Peninsula, Baja California, México, with a discussion of its biogeographic and taxonomic implications. *Bulletin of the Southern California Academy of Sciences*, 93(2): 45–80.
- Grismer, L.L. & Mellink, E. 1994. The addition of *Sceloporus occidentalis* to the herpetofauna of Isla de Cedros, Baja California, México and its historical and taxonomic implications. *Journal of Herpetology*, 28(1): 120–126.
- Klauber, L.M. 1930. Differential characteristics of southwestern rattlesnakes allied to *Crotalus atrox*. *Bulletin of the Zoological Society of San Diego*, 6: 1–58.
- Mara, W.P. 1995. *Venomous snakes of the world*. 224 pp. T.F.H. Publications, Neptune City, New Jersey.
- Mattison, C. 1995. *The encyclopedia of snakes*. 256 pp. Facts on File, New York.
- Minton, S.A. 1992. Serological relationships among pitvipers: evidence from plasma albumins and immunodiffusion. Pp. 155–161 in Campbell, J.A. & Brodie, E.D. Jr. (Eds.), *Biology of the pitvipers*. Selva, Tyler, Texas.
- Murphy, R.W., Kovac, V., Haddrath, O., Allen, G.S., Fishbein, A. & Mandrak, N.E. 1995. mtDNA gene sequence, allozyme and morphological uniformity among red diamond rattlesnakes, *Crotalus ruber* and *Crotalus exsul*. *Canadian Journal of Zoology*, 73: 270–281.
- Smith, H.M. & Smith, R.B. 1976. *Synopsis of the herpetofauna of Mexico*, vol. 3 (Source analysis and index for Mexican reptiles). John Johnson, North Bennington, Vermont.
- Smith, H.M. & Smith, R.B. 1993. *Synopsis of the herpetofauna of Mexico*, vol. 7 (Bibliographic addendum 4 and index, bibliographic addenda 2–4, 1979–1991). University Press of Colorado, Niwot, Colorado.
- Smith, H.M. & Taylor, E.H. 1950. Type localities of Mexican reptiles and amphibians. *Kansas University Science Bulletin*, 33(8): 313–380.
- Weidensaul, S. 1991. *Snakes of the world*. 128 pp. Apple Press, London.
- Welch, K.R.G. 1994. *Snakes of the world: a checklist*. 89 pp. R & A Research & Information, Taunton, U.K.
- Wüster, W., Golay, P. & Warrell, D.A. 1997. Synopsis of recent developments in venomous snake systematics. *Toxicon*, 35(3): 319–340.

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